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G90-993 Basic Cultural Practices for Commercial Production of Green (Snap) Beans

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NebGuide

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Basic Cultural Practices for Commercial Production of Green (Snap) Beans

This NebGuide discusses cultivar selection, production, pest management and packing of commercial green beans.

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Cultivars

Selection of cultivars depends on intended use or market. "Processor" cultivars are low in fiber and are best for home garden and roadside markets as well as processing. These include the various Bush Blue Lake selections (BBL 47, BBL 92, BBL 274) and others such as Early Gallatin, Eagle, Slenderwhite, Labrador, Flo, and Peak. The "fresh market" or "shipping" beans have high fiber to maintain quality during long distance shipping. These include Strike, Podsquad, Blazer, Triumph, Atlantic, Gatorgreen, Greencrop, Sprite, and many others. Cultivars with colored seed coats (Provider, Atlantic, Homestyle, and many "heritage" or "old-fashioned" beans) tend to germinate quicker in cool soils and resist seedling diseases better than cultivars with white seed coats. In later spring plantings when soil temperatures are warmer, there is no advantage to the dark seed coats. It should be noted that when dark-seeded beans are canned, the resulting canning broth will be dark and/or cloudy.

Handling Seed

Handle seed carefully. Dropping or throwing bags of seed damages the seed and results in "snakeheads" or

"baldheads". Affected plants either never mature or mature later than plants from undamaged seeds. The plant with a broken cotyledon or "seed leaf" will yield less than a plant with two intact cotyledonary leaves.

Soils

Beans prefer a well-drained, loose-textured soil with moderately high organic matter content. The pH should be between 6.0 and 6.8. Good drainage minimizes the risk of seedling diseases.

Rotation Crops

Root rot organisms and bacterial diseases often build up in soil when snap beans are planted repeatedly in the same field. A minimum three-year rotation is recommended, extended to four or five years if root rot diseases become serious. Corn, milo, and small grains are good rotation crops.

Seedbed Preparation

Turn the soil, disk thoroughly, and smooth before planting to obtain a uniform planting surface. Making low beds may improve drainage and help warm the soil in spring.

Fertilization

A soil test is recommended to determine the need for fertilizer. Current research indicates maximum yields occur at 60 pounds actual nitrogen per acre. Applying excessive nitrogen results in yield losses due to increased lodging, difficult harvesting, and increased pod rot. It also can waste fertilizer and money and possibly contaminate groundwater. A general guideline would be a 1:2:2 fertilizer to bring the level of available nitrogen to not more than 60 pounds per acre. One-half the fertilizer could be broadcast and the remainder applied in a band 3 inches to the side and 2 inches below the seeds. Rates should be based on the soil test and cropping history. Zinc may be required.

Sidedressing

On sandy or sandy-loam soils, a side-dressing of 20-30 pounds nitrogen per acre may be made 30-35 days after seeding or as needed after leaching rains.

Seeding

Green beans are seeded when soil temperatures exceed 55°F at planting depth (1-2"). Seeding can continue until roughly 70 days before the first expected frost to allow for crop maturity.

Optimum yields are obtained when beans are not planted too thickly. Seed size varies widely with variety and therefore the number of pounds of seed required per acre will vary. More pounds of seed per acre are needed for the larger-seeded cultivars. A rule-of-thumb would be 50 pounds per acre. Your seed company representative or seed dealer can provide specific recommendations. Plant six to eight seeds per foot of row, roughly 3/4 to 1 inch deep in rows 36-38 inches wide. If rows are 48 inches wide, a double row of beans can be planted. Optimum area per plant for most bush bean cultivars is approximately 36 square inches. Do not operate the planter faster than 3 miles per hour. Faster speeds result in seed injury and uneven stands.

Cultivation

Shallow cultivation is best. Cultivate only as needed to control grass and weeds. Snap beans which will be mechanically harvested must be planted and cultivated on a relatively flat surface -- not on high ridged rows. To minimize the spread of disease, do not cultivate when plants are wet. To control weeds, several good

herbicides are available, including Basagran, Dacthal, Dual, Prowl, and Treflan.

Irrigation

Irrigation is required for successful commercial production. Although the crop has an extensive root system, the plant is sensitive to moisture stress, especially during pod-set. Flower drop can occur when soil moisture is less than 60 percent field capacity or the temperature is high with low relative humidity. The result can be a "split-set" with reduced yields and quality in a once-over harvest.

Disease Control

The use of crop rotation and high quality disease-free seeds treated with fungicides will greatly reduce disease problems. If nematodes are a severe problem, soil fumigation may be required.

Insect Control

Beetles are the most troublesome insect for snap beans. The two most critical stages are the seedling stage and from bloom to harvest. Thrips in the flowers and on the leaves can streak pods during the flowering stage, reduce pod-set, and cause leaf-curl. Other insect pests include corn earworm, lesser corn stalk borer, leafhopper, aphid, tarnished plant bug, striped or spotted cucumber beetle, flea beetle, and corn seed maggot. For specific control measures and materials, consult your local extension agent.

Harvesting

The crop should be ready for harvest in 48-65 days after planting, depending on the climate and variety. Pick pods before they are over-mature. Seed development is the best gauge. For most cultivars, 10 representative seeds from the middle of the pod should not exceed 4 inches when aligned end-to-end. Pods should be 7/16 inch in diameter (#5 sieve) or less to be marketable. Timing of the harvest is critical because beans can become over-mature quickly, especially when temperatures are high. Remove harvested beans from the field as soon as possible to prevent excessive wilting and weight loss.

Grading and Packing

For the fresh market, beans are washed free of debris and graded. Beans should be graded on a white conveyor belt under fluorescent light; remove clusters, leaves, and damaged pods. Cultivars should not be mixed due to differences in pod color, size, and shape.

Pods have a high respiration rate and must be cooled after harvest to approximately 41°F.

Hydrocooling works well, although forced-air cooling also is used. If cooled below 38°F, chilling injury (pitting or russeting) may occur as well as an increase in storage diseases. Green beans are sold commercially in wire-bound crates or 1-1/9 bushel waxed cartons and shipped under high humidity to maintain turgor.

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